



z/OS Basic Information Center: Introduction to ISPF

Unit 2: Editing with ISPF

Module 4: ISPF Editor Search Functions



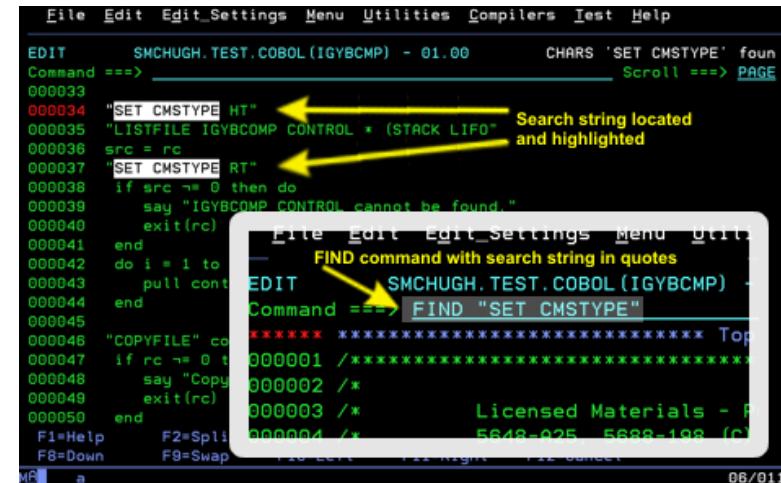
```
1. 3444
2. Score
PrintNumber
3. 219
DrawShape
4. 1
1sh
GetKey
5. di, 3444
6. xor di, di
7. mov cx, 2000
8. mov ax, 700h
9. rep stosw
10. call DrawBorders
11. mov di, 184
12. mov si, offset sNext
13. call PrintText
14. mov di, 272
15. mov si, offset sHiScore
16. call PrintText
```

```
17. mov al, 0
18. mov ah, 7
19. Clear screen and set color
20. mov di, 3430
21. mov si, offset sScore
22. call PrintText
23. mov di, 3010
24. mov si, offset sSpeed
25. call PrintText
```

```
26. mov di, 222
27. mov ax, HiScore
28. call PrintNumber
29. mov Score, 0
30. call ChooseGame
31. call Rand
32. mov NextShape, 0
33. call Newshape
34. call DrawTextShape
```

ISPF Editor Search Functions – Introduction

In this module, Searching data sets with the ISPF editor, we'll explore a number of commands that help you search for, change and exclude string data in data set members. The editor allows you to specify various types of string data, including: simple strings, delimited strings, hexadecimal strings, character strings, and picture strings.



```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      SMCHUGH.TEST.COBOL (IGYBCMP) - 01.00      CHARS 'SET CMSTYPE' foun
Command ==> _____
000033
000034 "SET CMSTYPE HT" Search string located and highlighted
000035 "LISTFILE IGYBCOMP CONTROL * (STACK LIFO"
000036 src = rc
000037 "SET CMSTYPE RT" Search string located and highlighted
000038 if src != 0 then do
000039   say "IGYBCOMP CONTROL cannot be found."
000040   exit(rc)
000041 end
000042 do i = 1 to
000043   pull cont
000044 end
000045
000046 "COPYFILE" co
000047 if rc != 0 t
000048   say "Copy"
000049   exit(rc)
000050 end
***** *****
000001 /******
000002 */
000003 /*
000004 */
F1=Help F2=Split F3=Left F4=Right F5=Select
F8=Down F9=Swap
08/01/1
```

Time to complete: 20 – 30 minutes

ISPF Editor Search Functions – Objectives

Upon completion of this module, you should be able to:

- Find data strings in a data set member
- Change one or all occurrences of a data string in a data set member
- Define ranges to limit the scope of the FIND, CHANGE, and EXCLUDE commands
- Exclude and redisplay lines of text in a member

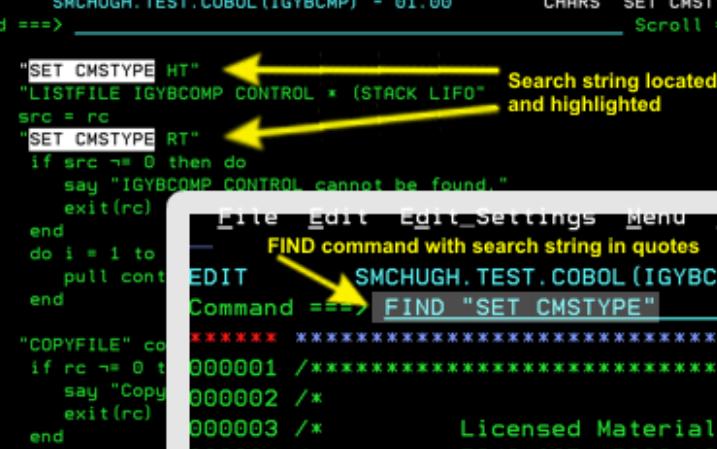
ISPF Editor Search Functions – Using the FIND Command to Search

You may have learned about the FIND command in the module on Working with Data Sets. You can use the FIND command to search for a specific string of characters.

Type FIND at the command line, followed by the string. If the search string contains blanks or special characters, enclose it in quotes. For example:

====> FIND “SET CMSTYPE”

The ISPF editor finds and highlights all occurrences of the target string and moves the cursor to the first line that contains the string.



The screenshot shows a terminal window with the following text:

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      SMCHUGH.TEST.COBOL(IGYBCMP) - 01.00      CHARS 'SET CMSTYPE' foun
Command ==> SET CMSTYPE HT                         Scroll ==> PAGE
000033
000034 "SET CMSTYPE HT"                         Search string located
000035 "LISTFILE IGYBCOMP CONTROL * (STACK LIFO" and highlighted
000036 src = rc
000037 "SET CMSTYPE RT"
000038 if src ~= 0 then do
000039   say "IGYBCOMP CONTROL cannot be found."
000040   exit(rc)
000041 end
000042 do i = 1 to
000043   pull cont
000044 end
000045
000046 "COPYFILE" co
000047 if rc ~= 0 t
000048   say "Copy"
000049   exit(rc)
000050 end
F1=Help   F2=Split   F9=Swap
F8=Down   F10=Sort   F11=Right   F12=Cancel
MB      a
06/01
```

A yellow arrow points to the line "SET CMSTYPE HT" with the text "Search string located and highlighted".

A yellow arrow points to the terminal window title bar with the text "FIND command with search string in quotes".

A yellow arrow points to the terminal window title bar with the text "FIND "SET CMSTYPE"".

ISPF Editor Search Functions – The CHANGE Command

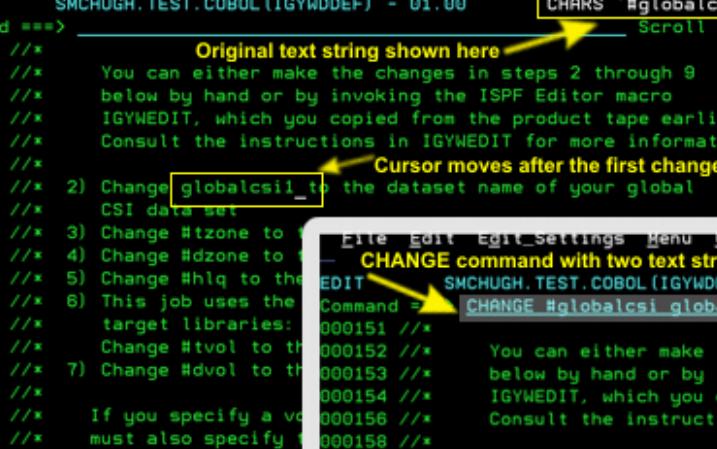
Use the CHANGE command to search for a string and replace it with a second string. The CHANGE command takes two strings. The first string is the target text, and the second is the replacement text.

For example, the following command

====> CHANGE #globalcsi globalcs

searches for the first occurrence of the target string `#globalcsi` and replaces it with the string `globalcsi`. If either the target or replacement string contains spaces or special characters, surround the string with quotes.

To replace all occurrences throughout the source member, add the keyword ALL to the end of the command. With the ALL keyword, changed lines are marked with ==CHG> in the line command area.



The screenshot shows the ISPF Editor interface with the following details:

- File Edit Edit_Settings Menu Utilities Compilers Test Help** (top menu bar)
- EDIT SMCHUGH.TEST.COBOL(IGYWDEF) - 01.00** (window title)
- CHARS '#globalcsi' chang** (input field)
- Original text string shown here** (text in the window)
- Scroll ==> PAGE** (text in the window)
- 000151 //**** (text in the window)
- 000152 //** You can either make the changes in steps 2 through 9** (text in the window)
- 000153 //** below by hand or by invoking the ISPF Editor macro** (text in the window)
- 000154 //** IGYWEDIT, which you copied from the product tape earlier.** (text in the window)
- 000155 //** Consult the instructions in IGYWEDIT for more information** (text in the window)
- 000156 //**** (text in the window)
- 000157 //**** (text in the window)
- 000158 //**** (text in the window)
- 000159 //** 2) Change **globalcsi** to the dataset name of your global** (text in the window)
- 000160 //**** (text in the window)
- 000161 //** CSI data set** (text in the window)
- 000162 //**** (text in the window)
- 000163 //** 3) Change #tzone to t** (text in the window)
- 000164 //** 4) Change #dzone to d** (text in the window)
- 000165 //** 5) Change #hlq to the** (text in the window)
- 000166 //** 6) This job uses the** (text in the window)
- 000167 //** target libraries:** (text in the window)
- 000168 //** Change #tvol to the** (text in the window)
- 000169 //** 7) Change #dvol to the** (text in the window)
- 000170 //**** (text in the window)
- F1=Help F2=Split F3=Exit F4=Find F5=Find Next F6=Find Previous F7=Find All F8=Down F9=Swap F10=Left F11=Right F12=End** (bottom keyboard mapping)

A yellow arrow points from the 'chang' field in the main window to the 'chang' field in a pop-up window titled 'CHANGE command with two text strings'. The pop-up window contains the following text:

- File Edit Edit_Settings Menu Utilities** (pop-up menu bar)
- CHANGE command with two text strings** (pop-up title)
- EDIT SMCHUGH.TEST.COBOL(IGYWDEF) - 01.00** (pop-up window title)
- Command = **CHANGE #globalcsi globalcsi**** (pop-up input field)
- 000151 //**** (text in the pop-up window)
- 000152 //** You can either make the chan** (text in the pop-up window)
- 000153 //** below by hand or by invoking** (text in the pop-up window)
- 000154 //** IGYWEDIT, which you copied f** (text in the pop-up window)
- 000155 //** Consult the instructions in** (text in the pop-up window)
- 000156 //**** (text in the pop-up window)
- 000157 //**** (text in the pop-up window)
- 000158 //**** (text in the pop-up window)
- 000159 //** 2) Change #globalcsi to the dat** (text in the pop-up window)
- 000160 //**** (text in the pop-up window)
- 000161 //** CSI data set** (text in the pop-up window)
- 000162 //**** (text in the pop-up window)

ISPF Editor Search Functions – Limiting Range on FIND and CHANGE Commands

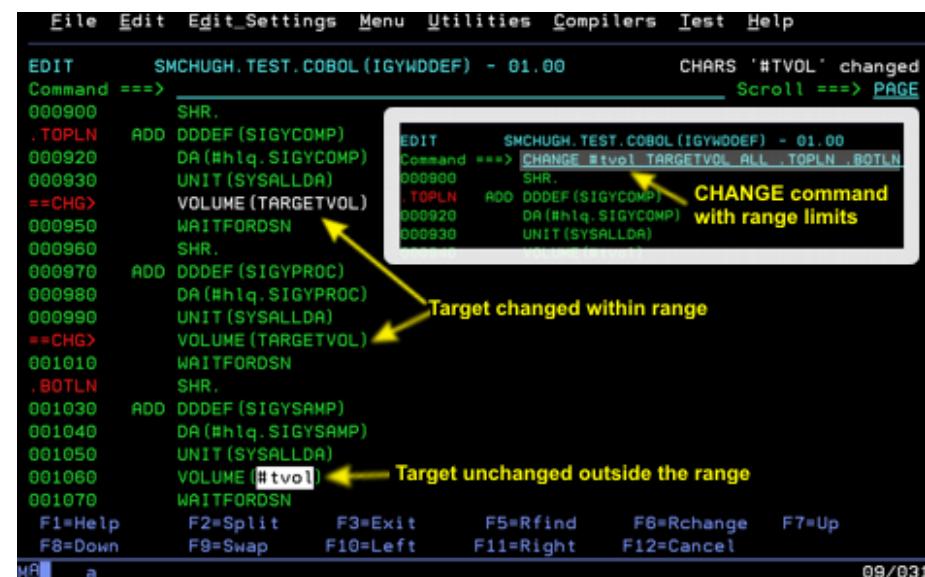
To limit the range affected by either the FIND or CHANGE command, use labels at the end of the command to identify the beginning and the end of range.

You must first assign the labels to the first line and last line of the range before using them in the FIND or CHANGE command.

To assign a label to a line, position the cursor at the line, and type the label, preceded by a period (.) .

Include the period as part of the label in the FIND or CHANGE command. The following CHANGE command changes all occurrences of the string #tvol to TARGETVOL, within the lines labeled .TOPLN and .BOTLN:

====> CHANGE #tvol TARGETVOL ALL .TOPLN .BOTLN



```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      SMCHUGH.TEST.COBOL(IGYW0DDEF) - 01.00      CHARS '#TVOl' changed
Command ==> 
000900      SHR.
. TOPLN    ADD DDDEF(SIGYCOMP)
000920    DA(##hlq.SIGYCOMP)
000930    UNIT(SYSAOLDA)
==CHG>    VOLUME(TARGETVOL)
000950    WAITFORDSN
000960      SHR.
000970    ADD DDDEF(SIGYPROC)
000980    DA(##hlq.SIGYPROC)
000990    UNIT(SYSAOLDA)
==CHG>    VOLUME(TARGETVOL)
001010    WAITFORDSN
. BOTLN    SHR.
001030    ADD DDDEF(SIGYSAMP)
001040    DA(##hlq.SIGYSAMP)
001050    UNIT(SYSAOLDA)
001060    VOLUME(#tvol)      CHANGE command with range limits
001070    WAITFORDSN
Target changed within range
Target unchanged outside the range
F1=Help      F2=Split      F3=Exit      F5=Rfind      F6=Rchange      F7=Up
F8=Down      F9=Swap       F10=Left     F11=Right     F12=Cancel
09/031
```

ISPF Editor Search Functions – Search Keywords FIRST and LAST

To alter the direction of the search, add the keywords FIRST or LAST to the FIND or CHANGE command. The keyword FIRST means to start at the top of the source member or range and search forward. LAST indicates to start at the bottom and search backward.

In this example we have found and replaced the last occurrence of the target string `#tzone` with the text string `TARGETZONE`.

Since we did not use the keyword ALL in this command, the editor only changes the first occurrence of the target string it finds and does not change the string #tzone in any of the lines above it.

ISPF Editor Search Functions– Additional FIND and CHANGE Command Keywords

Additional keywords help you specify exactly the kind of match desired.

If you add the keyword WORD to the FIND or CHANGE command, the target string must exist as a separate word, or it will not be changed. In this example, the ISPF editor found and changed the string AVE to AVENUE, but ignored the string AVE in the existing word AVENUE.

If you add the keyword PREFIX, the target string must be at the start of a word, and if you use the keyword SUFFIX, the target string must exist at the end of a word.

```
File Edit Settings Menu Utilities Compilers Test Help
EDIT      SMCHUGH.TEST.COBOL(IGYTCARA) - 01.02
Command ==> WORD 'AVE' changed
055600      05 data-w9          pic x(27)
055700          value "W917TH FREEWAY MARINA EXIT".
055800      05 data-wa          pic x(27)
055900          value "WA580 FW. GRAND AVENUE EXIT ".
056000      05 data-wb          pic x(27)
056100          value "WB14TH STREET/165TH AVENUE".
056200      05 data-wc          pic x(27)
056300          value "WC580 FREEWAY SAN LEANDRO ".
056400
056500
056600
056700
056800
056900
057000
057100
057200
057300
F1=Help
F8=Down
WORD 'AVE' changed
Scroll ==> PAGE
AVE changed to
AVENUE while AVE
in existing AVENUE
was not changed
File Edit Settings Menu Utilities Compilers Test Help
EDIT      SMCHUGH.TEST.COBOL(IGYTCARA) - 01.01
Command ==> CHANGE AVE AVENUE WORD
055600      05 data-w9          pic x(27)
055700          value "W917TH FREEWAY MARINA EXIT".
055800      05 data-wa          pic x(27)
055900          value "WA580 FW. GRAND AVE EXIT ".
056000      05 data-wb          pic x(27)
056100          value "WB14TH STREET/165TH AVENUE".
056200
056300
056400
056500
056600
056700
056800
056900
057000
057100
057200
057300
F1=Help
F8=Down
CHANGE
command
with WORD
keyword
```

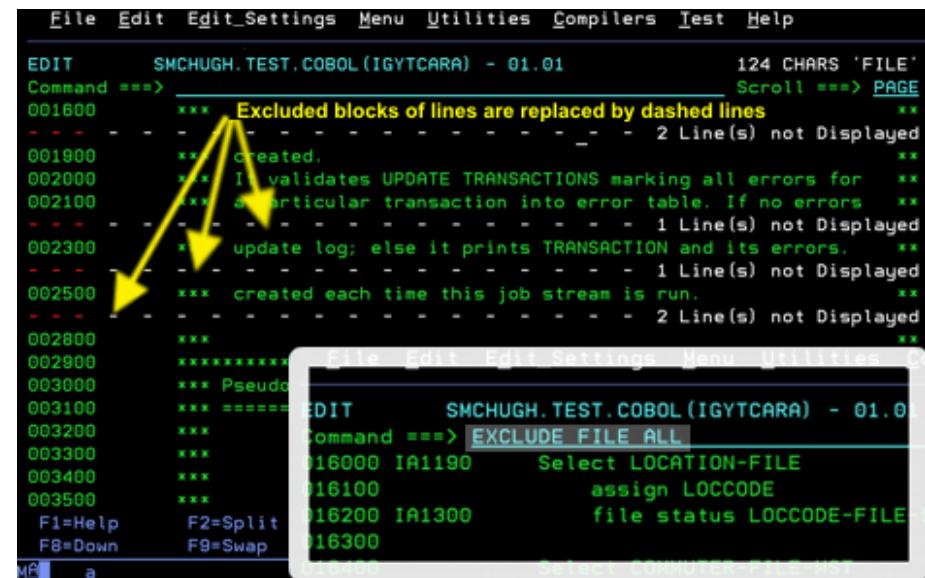
ISPF Editor Search Functions – Excluding Lines from the Search - Frame 1

To exclude lines from a search, use the EXCLUDE command before you issue the FIND or CHANGE command. For example, the command:

====> EXCLUDE FILE ALL

excludes all lines within the source that contain the string FILE. The editor no longer displays the excluded lines, but replaces them by a single dashed line that indicates how many lines are not displayed.

In the FIND or CHANGE command you can then instruct the editor to work with either excluded or the included lines. To search only the excluded lines, add X at the end of the command. To search only the included lines, add NX at the end of the command.



The screenshot shows the ISPF Editor interface. The main window displays a COBOL source code file named SMCHUGH.TEST.COBOL(IGYTCARA) - 01.01. The status bar at the top right shows '124 CHARS 'FILE''. The status bar at the bottom right shows 'Scroll ==> PAGE'. The code contains several lines starting with '***' and 'xx'. A yellow arrow points to a dashed line in the code, and another yellow arrow points to the message 'Excluded blocks of lines are replaced by dashed lines' in the status bar. The bottom window shows a command history with the command 'EXCLUDE FILE ALL' entered. The status bar at the bottom right of this window shows 'Select LOCATION-FILE' and 'assign LOCCODE'.

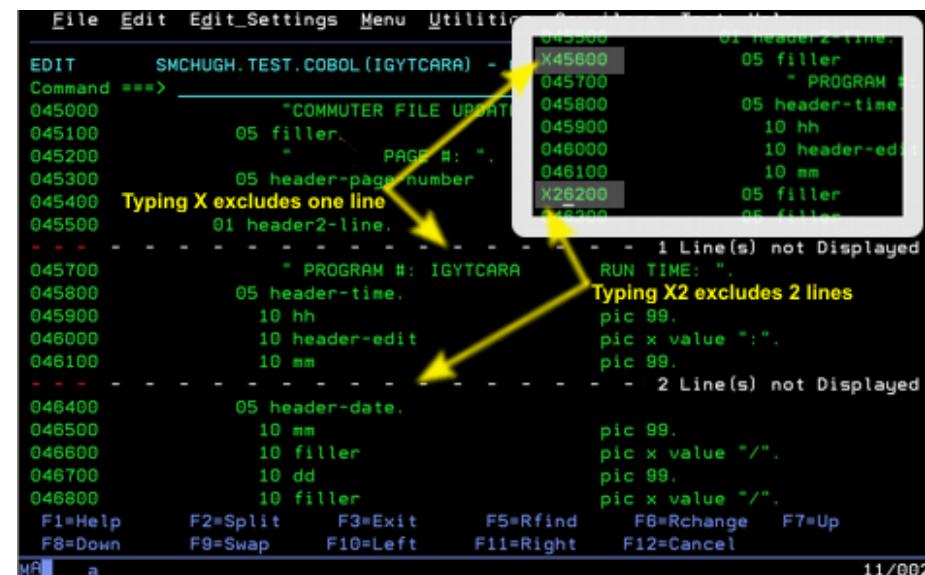
ISPF Editor Search Functions – Excluding Lines from the Search - Frame 2

You may also exclude lines by using the exclude line command (X) in the line command area.

There are three forms of this command:

- X Excludes this line
- Xn Excludes n lines starting with this line
- XX Excludes the block of lines beginning with the first XX command

This example shows using X to exclude a single line and X2 to exclude two lines.



The screenshot shows an ISPF Editor session with the following details:

- File:** EDIT SMCHUGH.TEST.COBOL(IGYTCARA)
- Search Command:** X
- Search Results:** The search results are displayed in a scrollable window. The first result is highlighted with a yellow box and the text "Typing X excludes one line". The line "X26200" is also highlighted with a yellow box and the text "Typing X2 excludes 2 lines".
- Message Area:** The message area at the bottom right shows "1 Line(s) not Displayed" and "2 Line(s) not Displayed".
- Bottom Line:** The bottom line shows function key definitions: F1=Help, F2=Split, F3=Exit, F5=Rfind, F6=Rchange, F7=Up, F8=Down, F9=Swap, F10=Left, F11=Right, F12=Cancel.
- Page Number:** 11/002

ISPF Editor Search Functions – Excluding Lines from the Search - Frame 3

Use the XX form of the exclude line command to exclude a block of lines.

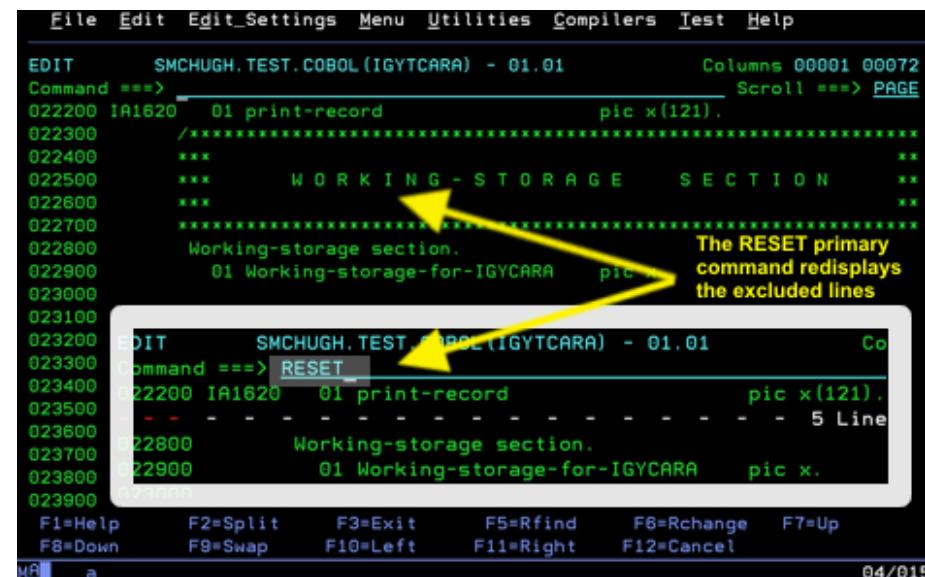
For example, you might want to exclude program comments from the display, so you can edit only the code as shown here.

```
File Edit Edit Settings Menu Utilities Compilers Test Help
EDIT      SMCHUGH.TEST.COBOL(IGYTCARA) - 01.01      Columns 00001 00072
Command ==> _____ Scroll ==> PAGE
022200 IA1620 01 print-record      pic x(121).
----- 5 Line(s) not Displayed
022800 Working-storage section.
022800 01 Working-storage-for-IGYCARA      pic x.
023000      Use XX line commands to bracket a block of lines to exclude
023100 77 comp-code      pic S9999 comp.
023200 77 ws      pic 1.
023300
023400
023500 01 i-      pic 9.
023600 05      pic 9.
023700 8      pic 9.
023800
023900
024000 01 st      pic 9.
024100 05      pic 9.
024200 8      pic 9.
024300 05      pic 9.
XX2300 /***** 022400 *** 022500 ***      W O R K I N G - S
022600 *** 022700 **** 022800 Working-storage section.
F1=Help F2=Split F9=Swap F10=Left F11=Right F12=Cancel
MR  a
06/00
```

ISPF Editor Search Functions – Redisplaying Excluded Lines - Frame 1

There are several ways to redisplay all or some of the excluded lines.

To redisplay all the excluded lines, type RESET at the command prompt, as shown here.



The screenshot shows the ISPF Editor interface with a COBOL source code file named SMCHUGH.TEST.COBOL(IGYTCARA) - 01.01. The editor window displays several lines of COBOL code, including a WORKING-STORAGE SECTION and a Working-storage section. A yellow arrow points from the text "The RESET primary command redisperses the excluded lines" to the command line where "RESET" is typed. Another yellow arrow points to the command line itself, which is highlighted in a box. The status bar at the bottom shows function key definitions: F1=Help, F2=Split, F3=Exit, F5=Rfind, F6=Rchange, F7=Up, F8=Down, F9=Swap, F10=Left, F11=Right, F12=Cancel. The date 04/015 is also visible in the status bar.

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      SMCHUGH.TEST.COBOL(IGYTCARA) - 01.01      Columns 00001 00072
Command ==> -                                     Scroll ==> PAGE
022200 IA1620  01 print-record                  pic x(121).
022300 /*****
022400 ***
022500 ***
022600 ***
022700 *****
022800 Working-storage section.
022900   01 Working-storage-for-IGYCARA  pic x.
023000
023100
023200
023300
023400
023500
023600
023700
023800
023900
022200 IA1620  01 print-record                  pic x(121).
022300 /*****
022400 ***
022500 ***
022600 ***
022700 *****
022800 Working-storage section.
022900   01 Working-storage-for-IGYCARA  pic x.
023000
023100
023200
023300
023400
023500
023600
023700
023800
023900
F1=Help   F2=Split   F3=Exit   F5=Rfind   F6=Rchange   F7=Up
F8=Down  F9=Swap    F10=Left  F11=Right F12=Cancel
04/015
```

The RESET primary command redisperses the excluded lines

022200 IA1620 01 print-record pic x(121).
022300 /*****
022400 ***
022500 ***
022600 ***
022700 *****
022800 Working-storage section.
022900 01 Working-storage-for-IGYCARA pic x.

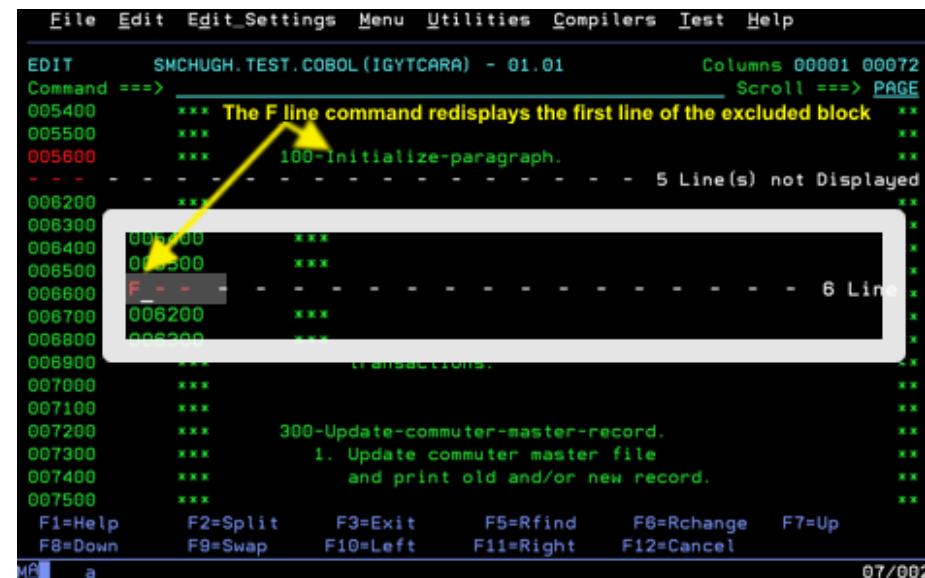
ISPF Editor Search Functions – Redisplaying Excluded Lines - Frame 2

You can also use the following line commands to redisplay specific lines of text:

- F (show the first line)
- L (show the last line)
- S (show lines)

To redisplay the first line of excluded text, type F in the line command area next to where lines were excluded, as shown in this example. To redisplay multiple lines use the command form Fn.

The S line command redisperses lines based on indentation level. If you type S9, the editor displays the nine lines with the left most indentation. This can be useful for lining up IF and ELSE clauses in large blocks of indented code.



The screenshot shows the ISPF Editor interface with the following details:

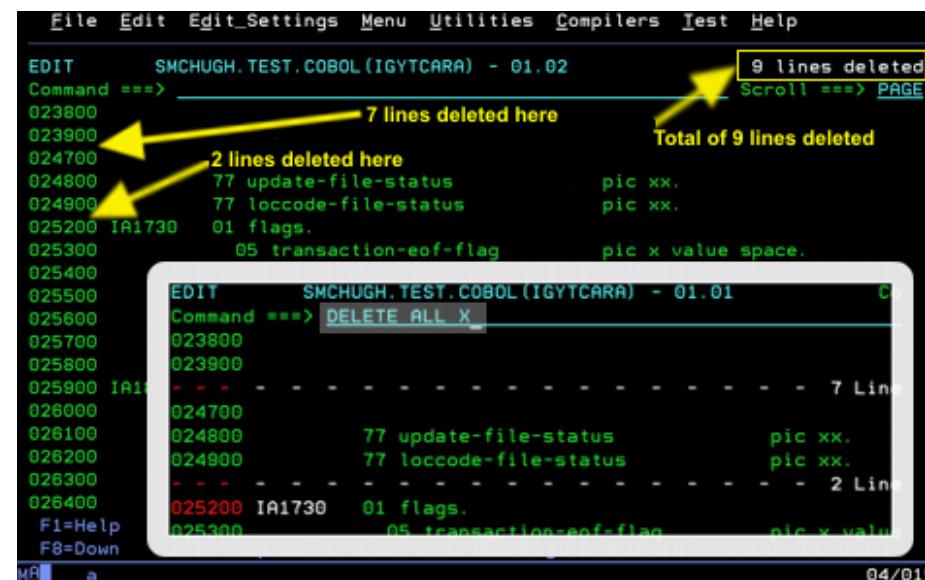
- File Bar:** File, Edit, Edit_Settings, Menu, Utilities, Compilers, Test, Help.
- Toolbar:** EDIT, Command ==>, Columns 00001 00072, Scroll ==> PAGE.
- Text Area:** The window title is SMCHUGH.TEST.COBOL(IGYTCARA) - 01.01. The status bar shows 5 Line(s) not Displayed.
- Line Command Area:** The line command area shows several lines starting with '005...' and '006...'. The line '006500' is highlighted with a yellow arrow and a callout box. The callout box contains the text: 'The F line command redisperses the first line of the excluded block.' Below this, another callout box shows the line '006500' with the text: '100-Initialize-paragraph.'
- Bottom Status Bar:** F1=Help, F2=Split, F3=Exit, F5=Rfind, F6=Rchange, F7=Up, F8=Down, F9=Swap, F10=Left, F11=Right, F12=Cancel.
- Bottom Right:** 07/002.

ISPF Editor Search Functions – Deleting or Retaining Excluded Lines

You can use the DELETE primary command to delete either the excluded lines or the non-excluded lines from the member.

To delete the lines that have been excluded from the display, type DELETE ALL followed by X on the command line, as shown in this example.

To delete the lines that have not been excluded from the display (and thus retain only the excluded lines), type NX after the DELETE ALL primary command.



The screenshot shows two panels of the ISPF Editor. The top panel displays a COBOL source code with several lines deleted. The command line shows 'Command ==>'. The bottom panel shows the command 'DELETE ALL X' entered in the command line. Arrows point from the deleted lines in the top panel to the command line in the bottom panel, illustrating the use of the command to delete excluded lines.

File Edit Edit_Settings Menu Utilities Compilers Test Help

EDIT SMCHUGH.TEST.COBOL(IGYTCARA) - 01.02

Command ==>

023800 7 lines deleted here

023900

024700 2 lines deleted here

024800 77 update-file-status pic xx.

024900 77 loccode-file-status pic xx.

025200 IA1730 01 flags.

025300 05 transaction-eof-flag pic x value space.

025400

025500

025600

025700

025800

025900 IA1730 01 flags. 7 Lines

026000

026100 024700

026200 024800 77 update-file-status pic xx.

026300 024900 77 loccode-file-status pic xx.

026400 025200 IA1730 01 flags. 2 Lines

025300 05 transaction-eof-flag pic x value

9 lines deleted

Scroll ==> PAGE

Total of 9 lines deleted

File Edit Edit_Settings Menu Utilities Compilers Test Help

EDIT SMCHUGH.TEST.COBOL(IGYTCARA) - 01.01

Command ==> **DELETE ALL X**

023800

023900

024700

024800 77 update-file-status pic xx.

024900 77 loccode-file-status pic xx.

025200 IA1730 01 flags.

025300 05 transaction-eof-flag pic x value

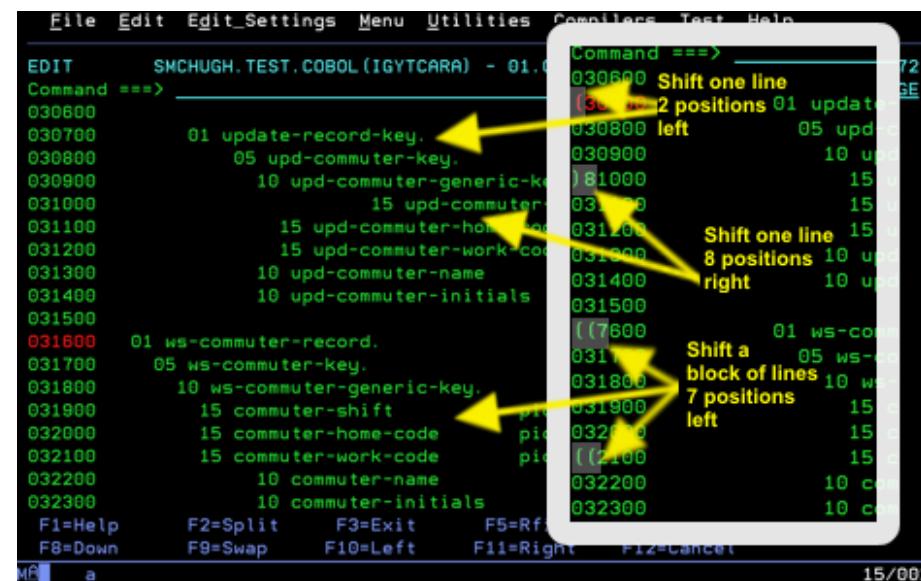
04/01

ISPF Editor Search Functions – Shifting Indentation

The editor also provides line level commands to shift or change the indentation of one or more lines. The left parenthesis symbol shifts lines left while the right parenthesis symbol shifts lines right. The format of these commands can be:

- (shifts one line two spaces left
- (n shifts one line *n* spaces left
- ((marks the beginning and end of a block to shift two spaces left
- ((n marks the beginning of a block to shift *n* spaces left

For example, a single (shifts the line 2 positions to the left. To shift one line 8 spaces to the right, type)8 in the line command area. To mark a block of text to shift left 7 spaces, type ((7 at the first line of text and)) at the last line of text.



The screenshot shows the ISPF Editor interface with the following text in the command area:

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
EDIT      SNCHUGH.TEST.COBOL(IGYTCARA) - 01.0
Command ==> 030600
030700      01 update-record-key.
030800      05 upd-commuter-key.
030900      10 upd-commuter-generic-key.
031000      15 upd-commuter-home-code.
031100      15 upd-commuter-home-code.
031200      15 upd-commuter-work-code.
031300      10 upd-commuter-name.
031400      10 upd-commuter-initials.
031500
031600      01 ws-commuter-record.
031700      05 ws-commuter-key.
031800      10 ws-commuter-generic-key.
031900      15 commuter-shift.
032000      15 commuter-home-code.
032100      15 commuter-work-code.
032200      10 commuter-name.
032300      10 commuter-initials.
```

Yellow arrows point to the following lines in the command area:

- 030800 left (shifts one line 2 positions left)
-)81000 (shifts one line 8 positions right)
- 031200 (shifts one line 15 positions right)
- 031800 7 positions left (shifts a block of lines 7 positions left)
- 031900 7 positions left (shifts a block of lines 7 positions left)

Yellow arrows also point to the right parenthesis symbols () in the command area, indicating they are part of the command sequence.

ISPF Editor Search Functions – Summary

In this module, ISPF Editor Search Functions, you have learned how to :

- Find specific text strings in a data set member
- Change specific text strings in a data set member
- Limit the range of the FIND and CHANGE commands
- Use other keywords with the FIND and CHANGE commands
- Exclude and redisplay lines of text in the source member